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ABSTRACT

A study investigated (1) how adult responses vary with children who display different rates of positive social behaviors, and (2) predictive sequential relationships between specific types of child and adult behavior within an interaction. Pretest data were used to select nine girls from 4 to 6 years of age who ranged from low to high in their composite performance on three criterion behaviors: visual attention to adults, smiling, and spontaneous talking. Assigned to low-, moderate-, or high-performance groups, each child participated in one 10-minute dyadic interaction with each of six adult subjects. Adults blind to the purpose of the study were instructed to present two tasks to the children and to provide help and information they thought appropriate. During interactions, observation and videotapes were used to collect data on both children and adults. Information was also obtained about children's work on the tasks, verbal and nonverbal responsiveness to questions, and two types of spontaneous comments. Five aspects of adult behavior were examined: positive nonverbal behavior, positive verbal feedback, humor, positive personal comments about the child, and questions and response preemptions. A stepwise discriminant analysis, repeated measures analysis of variance; and a lag-1, bivariate sequential analysis on behavioral data segmented into 10-second units, were employed to analyze the data. Results are discussed. (RH)

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An Analysis of Social Interactions Between
Preschool Children and Adults

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An Analysis of Social Interaction Between

Preschool Children and Adults

The developmental literature has identified many factors that influence children's behavior and social development. The behavior of adults -- particularly that of parents, caregivers, and teachers -- generally is regarded as one of the most powerful. In recent years, a number of psychologists have argued for an inclusive, interactive perspective, one that also considers children's effects on the behavior of adults (e.g., Bell & Harper, 1977; Lewis & Rosenblum, 1974). Researchers working from a child effects perspective have demonstrated that children contribute to their own social environments, and perhaps to their future social development, by their influence on adult behavior.

In our research, we have been particularly interested in the behaviors by which children initiate and maintain mutually positive social interactions with adults. Specifically, we have examined the relationship between preschool girls' affiliative social behaviors and those of adult women asked to work with them on preacademic and art tasks. The study was designed to answer two questions: a) How do adults' responses vary across children who display different rates of positive social behaviors? and b) What are the predictive sequential relationships between specific types of child and adult behavior within an interaction?

Previous research has provided interesting information about the functions of children's social behavior in interaction with adults. For example, the work of Stern (1974), Clarke-Stewart (1973), and Gewirtz and Boyd (1976) has demonstrated that positive infant behavior -- such as gazes, smiles, and vocalizations -- promotes attentive, nurturant responses from the children's mothers. In studies of elementary-aged children, Cantor and her colleagues

(Cantor & Gelfand, 1977; Cantor, Wood & Gelfand, 1977) have found that children receive more attention, help, and positive evaluations from adults when they assume socially responsive -- rather than unresponsive -- roles.

The present study extends these and similar findings in two ways. First, little of the previous research relates directly to children of preschool age. Without empirical evidence, findings from studies of infants and elementary-aged children cannot be assumed to hold true for preschoolers. Thus, we elected to focus our research on the preschool age group, selecting child participants who ranged in age from 4 to 6 years.

Second, with the exception of mother-infant research, most of the previous studies have examined adults' responses to simulated or experimentally contrived differences in child behavior, rather than actual differences. While these procedures have allowed for precise experimental control of child variables, one might ask whether similar results would be obtained for naturally-occurring variations in child behavior. Thus, in the present study, we used pretest data to select nine girls who ranged from low to high in their composite performance of three criterion behaviors -- visual attention to adults, smiling, and spontaneous talking. The children were assigned to one of three groups -- low, moderate, or high.

Each of these children participated in one 10-min dyadic interaction with each of six adult subjects. Adults did not know the true purpose of the study until all observations were completed. They were instructed only to present two tasks to the children and to provide whatever help and information they thought was appropriate. Live observation and video tapes were used to collect data on both children and adults during these interactions. In addition to the three criterion child behaviors, we also obtained information

about children's work on the tasks, verbal and non-verbal responsiveness to questions, and two specific types of spontaneous comments -- descriptive statements about the task and personal comments about oneself.

We examined five aspects of adult behavior: a) positive nonverbal behavior such as smiles and visual attention; b) positive verbal feedback; c) humor, including humorous comments and laughs; d) positive personal comments about the child; and e) questions and response preemptions. Preemptio s occurred when adults spoke within 2 sec after asking a question; these potentially interfered with the child's opportunity to answer. Inter-observer agreement, assessed across all subjects, averaged 89% for child behavior (range = 71% to 100%) and 88% for adult behavior (range = 75% to 100%).

To verify the reliability of the pre-test selection procedures, we ranked the children on their performance of the three criterion skills during interaction with adult subjects. In general, the three groups maintained appropriate ordinal rankings (i.e., the children in the low-rate group obtained the three lowest ranks). Separation between the moderate and high-rate groups was less clear in that the lowest child from the high-rate group behaved similarly to the highest child in the moderate group. Figure 1 depicts differences in the distribution of the three skills across the three groups. All means for the low-rate group were below those for children assigned to the high-rate group. While the frequency of nonverbal skills in the moderate group was similar to that for high-rate children, their rates of spontaneous verbal behavior more closely matched those of the low-rate children. A step-wise discriminant analysis, based on all child behaviors observed in this study, revealed that a constellation of three behaviors -- visual attention, spontaneous statements about oneself,

and responsiveness to questions -- discriminated among groups at the highest level of significance.

The first task in the analysis of adult behavior was to examine differences across the three child groups. Using repeated measures ANOVA's, we found that adults gave significantly less visual attention to low-rate children than to those in the moderate- and high-rate groups. In fact, they spent increasingly less time looking at low-rate children as time passed within a session. When working with high-rate children, adults preempted fewer responses and used more humor than in their interactions with children from the other two groups. These data are represented in Figure 2. Several adult behaviors -- including smiles, positive verbal feedback, questions, and personal comments -- were not significantly variable across child groups.

Our second task was to obtain more detailed information about specific interrelationships between child and adult variables, using a lag-1, bivariate sequential analysis on behavioral data segmented into 10-sec units. For example, the unconditional probability that an adult would make a humorous comment was compared with the conditional probability that humor would occur in the interval immediately following a child's spontaneous comment. Statistical significance of the difference in these probabilities was evaluated by calculation of z scores, as described by Gottman and Parkhurst (1980). A number of behavioral relationships were both statistically significant overall and consistent across subjects -- consistent in the sense that z scores based on individual data were all in the same direction. In this paper, we describe only those results that identify predictive relationships between the criterion child behaviors -- or derivatives of those behaviors -- and subsequent adult responses (see Table 1).

Data for nonverbal child skills were consistent with previous findings that visual attention and smiling are reciprocated in social interactions (e.g., Bates, 1976). Both adult visual attention and smiling were significantly more likely if the child had looked or smiled during the preceeding 10-sec interval. No significant predictive relationships were found for the summary category of spontaneous comments, but findings did emerge for the two subcategories. Following descriptive task statements, adults were more likely to give positive task feedback, but less likely to make personal statements. The opposite results were obtained for children's statements about themselves.

Further results indicated that various combinations of the target skills were associated with differential adult responding. For example, adults were more likely to ask questions if the child had both looked and smiled in the previous interval. Spontaneous comments in combination with either a look or a smile were associated with positive task feedback. Adult humor, which varied significantly across groups, was more likely after a child had smiled and made a spontaneous comment. Similarly, adults were less likely to preempt children's responses when the child had previously combined all three criterion behaviors. Since high-rate children exhibited these latter two behavior combinations more frequently than other children, these findings might explain in part why they received more humor and less response preemption from adults.

Group differences in patterns of sequential dependencies also have been identified. One of the most striking facts in these comparisons is that low-rate children's performance of the criterion behaviors were, in general, less predictive of subsequent adult behavior than were those of other children. A word of caution should be given before making these

comparisons between groups. As in all statistical procedures, the power of the test is affected by the overall frequency of behavior. In some cases, if low-rate children had exhibited a higher frequency of behavior but had received the same proportionate amount of adult response, the conditional probabilities would have reached significance. We present a few results for which there was a clear disparity across groups (see Table 2).

For example, the overall finding for a predictive relationship between child and adult visual attention did not hold across all groups. This evidence of reciprocity was not found with the low-rate group. Additionally, when the high-rate children had both looked at the adult and smiled, adults were more likely to look at the children, smile, ask questions, and talk more than the average amount. For moderate-rate children, the same behaviors were associated with adults' looks, smiles, and praise. However, no significant predictive relations were found for low-rate children's combined looks and smiles. Thus, even when the low-rate children displayed the positive criterion behaviors, adults were less likely to respond to them differentially, at least in terms of the behaviors we measured in this study.

The reasons for these findings remain an interesting topic for future research. Perhaps children in the high and moderate groups combined the subtle nonverbal skills with other behaviors, such as vocalizations, that made them more salient to adults. Or, these children may have been more skillful in timing their looks and smiles appropriately. Also, adults would be less likely to contact very low frequency behaviors, thereby failing to contact their potentially reinforcing properties. This interpretation is supported by the decrement in adults' visual attention to low-rate children over time.

In summary, these results indicate that the nonverbal skills of visual attention and smiling are functional ones for preschool children in establishing positive social relationships with adults. The evidence for adult response to spontaneous comments is less definitive and indicates that more specific categories of verbal behavior might yield useful information. Comparisons across groups suggest that children with low rates of these skills may have fewer opportunities to enter into positive exchanges with adults. By virtue of their low frequency behavior, they may be less likely to receive positive adult responses that could serve as reinforcers for building their social skills. These results point to the need for further information about how the parameters and patterning of component social behaviors determine the function of those behaviors in social interaction between children and adults.

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BEHAVIOR OF CHILDREN IN THREE GROUPS

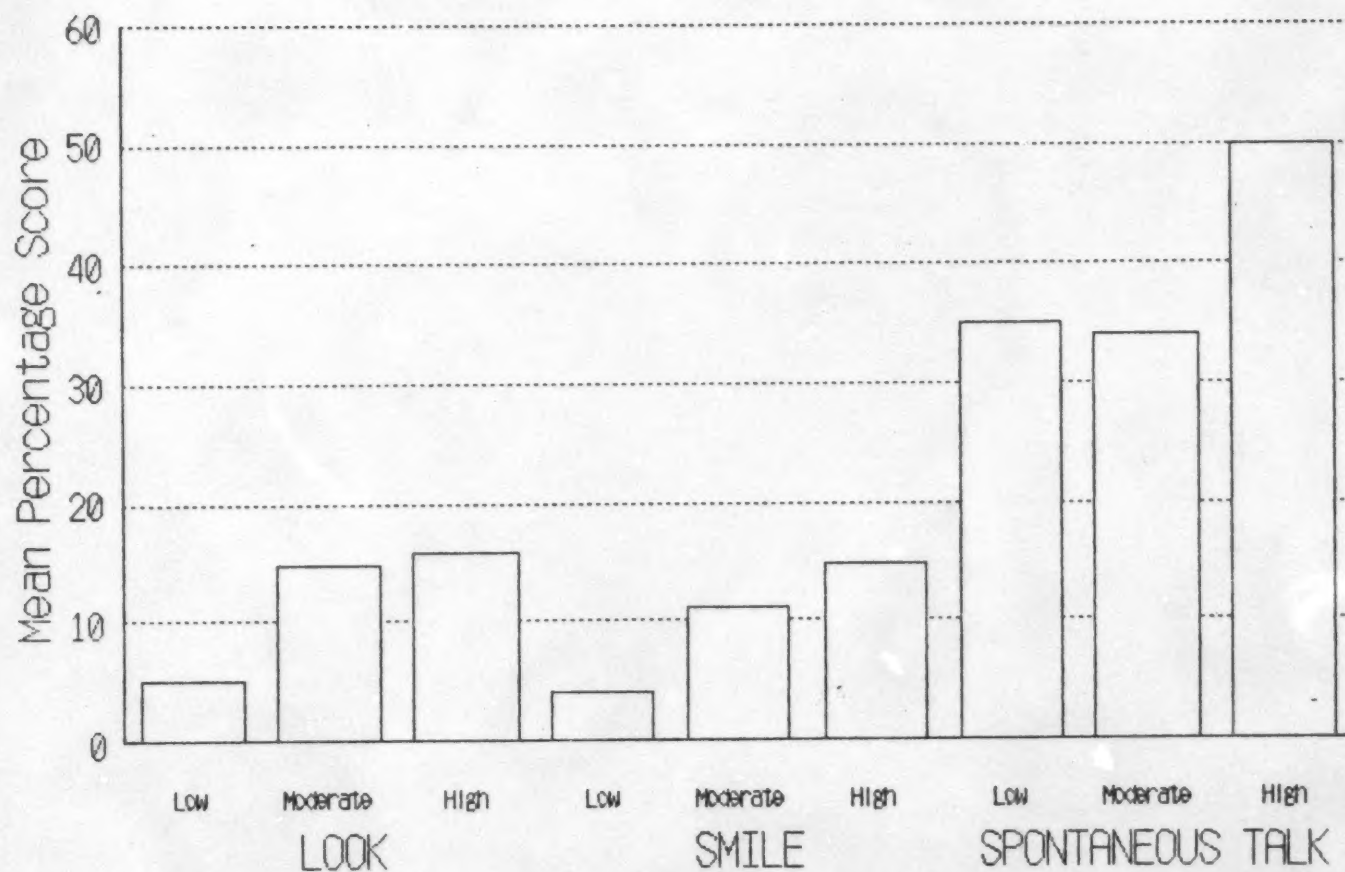


Figure 1

Adult Behavior With Three Child Groups

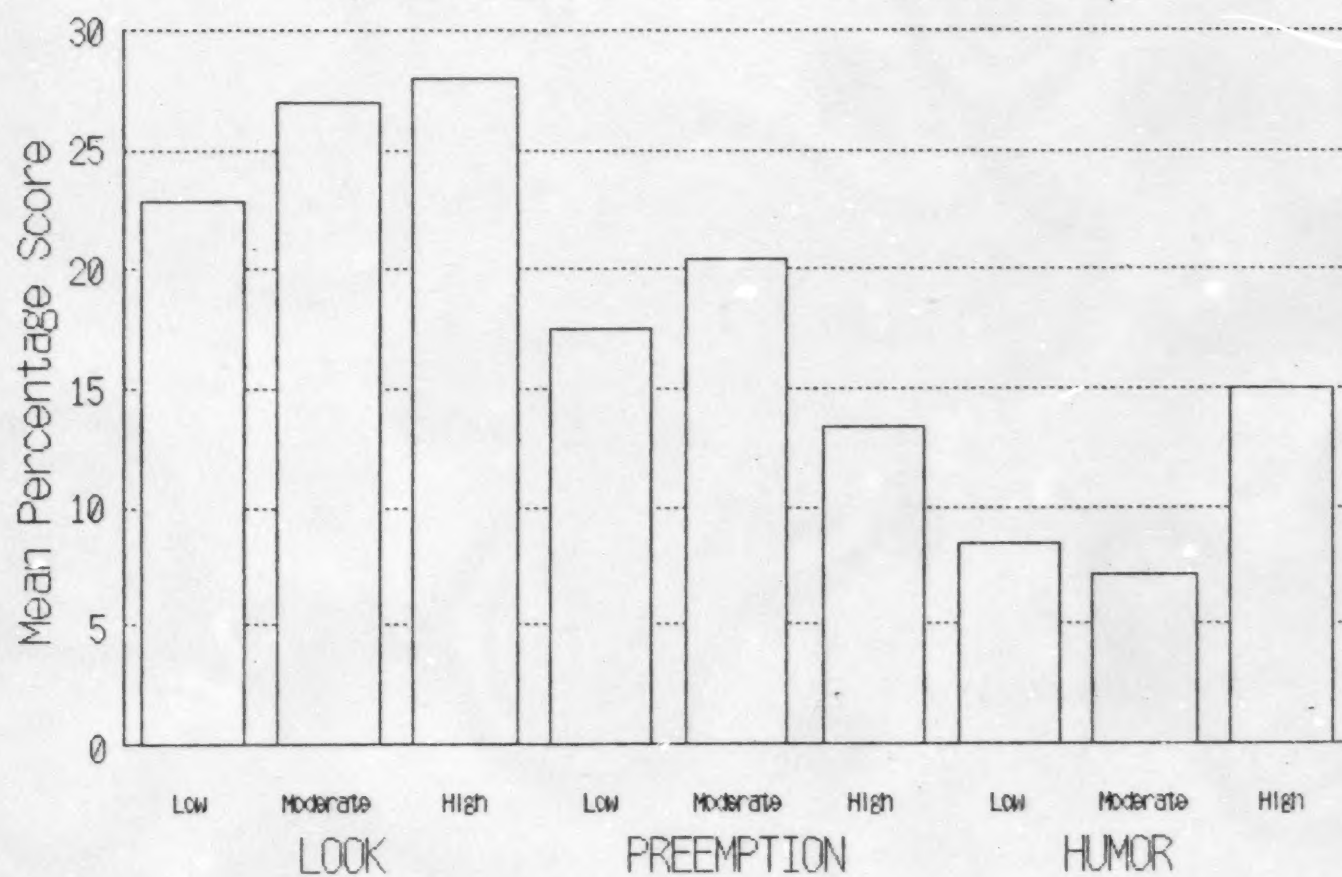


Figure 2

Table 1

CONDITIONAL PROBABILITIES FOR ADULT BEHAVIOR DURING THE 10-SECOND INTERVAL FOLLOWING CHILD BEHAVIOR

		Adult Behavior									
		Look at Child			Questions		Positive Task Feedback				
		Any Look	Long Look	Smile	Ask Q	Preempt Response	Approve	Praise	Humor	Personal Comment	
Unconditional Prob.		.61	.19	.27	.54	.14	.30	.12	.10	.09	
Child Behavior	Look at Adult:										
	Any Look	.69* +5.51	.25* +4.82	.33* +4.27	.58* +2.31	.13 -0.29	.31 +0.94	.14 +1.60	.11 +1.28	.10 +1.46	Prob. Z
	Long Look (1/2 of 10 sec interval)	.79* +5.55	.34* +5.43	.40* +4.20	.62* +2.35	.15 +0.79	.28 -0.46	.14 +0.90	.14* +2.05	.14* +2.55	
	Smile	.65* +2.28	.23* +2.91	.33* +3.47	.59* +2.81	.17* +2.25	.34* +2.37	.14 +1.38	.13* +2.87	.09 +0.09	
	Spontaneous Comments:										
	Any Comment	.62 +0.92	.20 +1.14	.27 -0.17	.54 +0.09	.11* -2.86	.34* +3.06	.11 -0.75	.11 +1.55	.10 +1.68	
	Task Description	.61 +0.12	.17 -1.62	.27 0.00	.52 -0.96	.11 -1.86	.37* +4.11	.14 +1.38	.10 -0.02	.06* -2.57	
	Self Statement	.67 +1.31	.30* +2.97	.33 +1.47	.66* +2.62	.09 -1.37	.15* -3.47	.04* -2.68	.12 +0.64	.39* +10.92	
	Look + Smile	.70* +4.08	.26* +3.97	.37* +4.59	.59* +2.25	.14 +0.38	.33 +1.36	.14 +1.36	.13* +2.20	.10 +0.80	
	Look + Spontaneous	.69* +3.41	.25* +3.25	.31 +1.79	.55 +0.31	.10* -2.39	.35* +2.36	.12 -0.26	.12 +1.08	.13* +2.58	
Smile + Spontaneous	.64 +1.34	.25* +2.58	.33* +2.43	.58 +1.39	.11 -1.41	.36* +2.59	.12 +0.30	.16* +3.68	.11 +1.36		
Look + Smile + Spontaneous	.68* +2.27	.26* +2.59	.33* +1.97	.56 +0.62	.08* -2.25	.36* +2.07	.12 -0.14	.14 +1.92	.13* +1.96		

Table 2

CONDITIONAL PROBABILITIES OF ADULT BEHAVIOR FOLLOWING CHILD BEHAVIOR - COMPARISONS ACROSS 3 GROUPS

	Adult Behavior										
	Look at Child			Questions		Positive Task Feedback				Talk More Than $\bar{X}$ Amount	
Child Behavior	Any Look	Long Look	Smile	Ask Q	Preempt Response	Approve	Praise	Humor	Personal Comment		
<u>Look at Adult</u>											
Low-Rate Group	.58 .60 +0.33	.16 .17 +0.57	.25 .32 +2.08*	.55 .51 -1.06	.15 .14 -0.37	.32 .34 +0.65	.13 .14 +0.31	.08 .12 +1.91	.08 .07 -0.38	.42 .47 +1.09	UC Prob. C Prob. Z Score
Moderate Group	.63 .74 +4.39*	.20 .25 +2.53*	.28 .35 +3.11*	.56 .59 +1.36	.15 .15 +0.02	.30 .30 +0.40	.12 .14 +1.82	.08 .07 -0.71	.06 .06 +0.11	.49 .49 +0.10	
High-Rate Group	.61 .69 +3.40*	.22 .28 +3.32*	.28 .32 +1.60	.51 .58 +3.18*	.11 .11 +0.24	.28 .30 +1.26	.12 .13 +0.79	.14 .15 +0.64	.13 .15 +1.65	.40 .47 +3.23*	
<u>Look + Smile</u>											
Low-Rate Group	.58 .57 -0.24	.16 .18 +0.56	.25 .35 +1.82	.55 .47 -1.26	.15 .15 +0.09	.32 .40 +1.43	.13 .13 +0.13	.08 .10 +0.52	.08 .02 --a	.42 .47 +0.72	
Moderate Group	.63 .75 +3.22*	.20 .29 +2.80*	.28 .41 +3.65*	.56 .59 +0.85	.15 .17 +0.68	.30 .29 -0.08	.12 .17 +2.39*	.08 .10 +1.03	.06 .06 -0.21	.49 .48 -0.19	
High-Rate Group	.61 .70 +2.80*	.22 .27 +2.00*	.28 .34 +1.97*	.51 .63 +3.44*	.11 .12 +0.41	.28 .33 +1.67	.12 .12 +0.08	.14 .17 +0.01	.13 .16 +1.26	.40 .49 +2.91*	

* p .05

^aThe frequency of the behavior combination was too low for analysis.^bUC Prob. = Unconditional probability; C Prob. = Conditional Probability